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Closure Sampling and Analysis Plan for Building 173 - Former Diesel UST Site

Robins Air Force Base
Warner Robins, Georgia

Prepared For

Air Force Center for Environmental Excellence
Brooks Air Force Base
San Antonio, Texas

and

Warner Robins Air Logistics Center
Robins Air Force Base
Warner Robins, Georgia

June 1996

AQM01-03-0545

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Closure Sampling and Analysis Plan
for
Building 173 Former Diesel UST Site
Robins AFB, Georgia

Prepared for:

Air Force Center for Environmental Excellence
Brooks AFB, Texas
and
Robins AFB, Georgia

June 1996

Parsons Engineering Science, Inc.
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Atlanta, Georgia 30329

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1. INTRODUCTION

This site closure sampling and analysis plan (SAP) has been prepared by Parsons Engineering Science, Inc. (Parsons ES) for submittal to the Georgia Department of Natural Resources Environmental Protection Division (GA EPD).

Since 1992, Robins Air Force Base (Robins AFB) has participated in the Air Force Bioventing Pilot Test Initiative Project for the U.S. Air Force Center for Environmental Excellence (AFCEE) and the Environmental Quality Directorate of the Air Force Armstrong Laboratory. The project included conducting more than 135 *in situ* bioventing pilot tests at 48 Air Force installations throughout the country. These tests were designed to collect data on the effectiveness of bioventing for the remediation of soil contaminated with fuel hydrocarbons (i.e., JP-4 jet fuel, diesel fuel, gasoline, heating oil, etc.). As part of this project, a bioventing pilot test was conducted at Robins AFB Building 173. The bioventing system began operation in September 1992 and currently remains in operation. Based on the results of this test, *in situ* bioventing has been effective enough to support closure of the former location of a 1,500 gallon diesel underground storage tank (UST) located at Building 173. This SAP presents a plan for confirmation groundwater and soil sampling to document the effectiveness of soil remediation at this site and to demonstrate compliance with regulatory requirements for closure.

This SAP consists of eight sections, including this introduction. Section 2 includes site description, history, and summary of previous investigations and remediation activities. Section 3 summarizes all applicable site closure requirements. A detailed site closure SAP is presented in Section 4. Analytical results will be presented in a site closure report as described in Section 5. The project implementation schedule is presented in Section 6. Section 7 provides site management information. Section 8 provides references cited in this SAP. It is anticipated that analytical results will support a no-further-action recommendation, and that site closure will be granted.

2. SITE DESCRIPTION AND HISTORY

Robins AFB is located in central Georgia approximately 18 miles south of Macon, adjacent to the town of Warner Robins. The boundaries of the Base encompass approximately 8,800 acres with facilities for operation, industrial, administrative, supply, and residential functions. A Base site plan is shown on Figure 2.1.

The primary missions of Robins AFB are the responsibilities assigned to the Warner Robins Air Logistics Center (WR-ALC), which has a three-fold mission as follows.

- *It is the worldwide logistics manager for assigned aircraft and commodities.* The WR-ALC is logistics manager for two Air Force transport aircraft (C-141 and C-130) and the F-15 fighter. In addition, electronics equipment managed at WR-ALC ties its support to every element of the aerospace combat force including seven missiles, four helicopters, two utility aircraft, and four drones and remotely piloted vehicles. In addition, Robins AFB is home for the Joint STARS and a B-1B Bomber Wing.

- *It is the repair center for aircraft and five distinct technologies.* WR-ALC is a major technology repair center for airborne electronics for the Air Force. In addition, aircraft repair and maintenance responsibilities for the F-15, C-141, and C-130 are assigned to WR-ALC. WR-ALC has various shops (plating, machining, metal bonding, painting, etc.) that support the major workload activities.

- *It serves as a storage center at wholesale and retail levels for Air Force spare parts and systems.* The third major mission involves receiving, storing, issuing, and transporting material. These functions are carried out in an automated warehouse on Base. Together with its worldwide mission, WR-ALC has responsibility for logistics support of Air Force installations in the geographical area including the eastern United States, Newfoundland, Greenland, Iceland, Bermuda, the Azores, and activities in Europe and the Middle East.

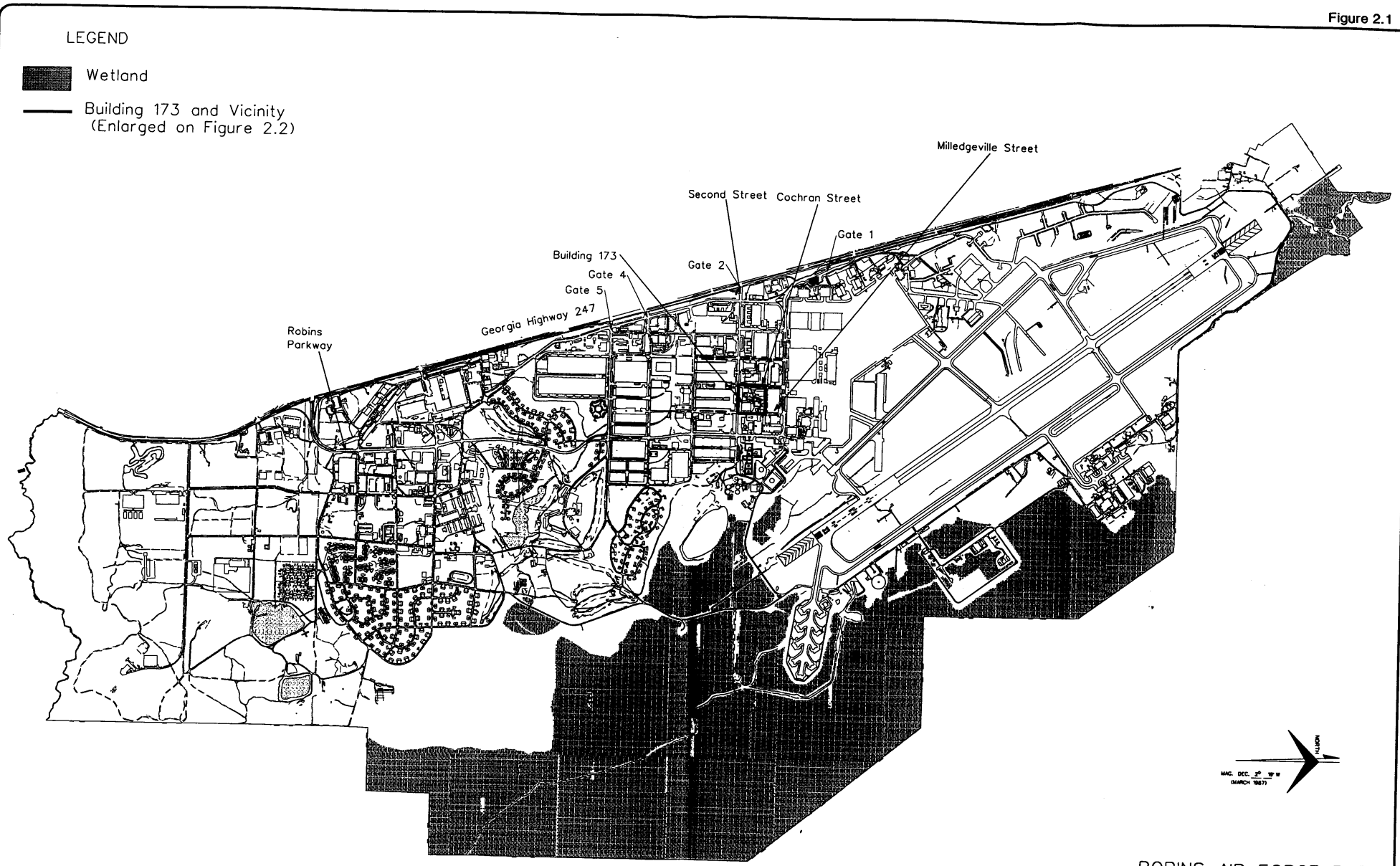
2.1 BUILDING 173 FORMER DIESEL UST SITE

Building 173 is located north of Second Street, east of Cochran Street, and west of Milledgeville Street (Figure 2.2). The area immediately surrounding the building is grass with an asphalt parking lot to the west and Milledgeville Street to the east. The former 1,500-gallon UST contained diesel fuel for use in emergency power generators. The UST was located on the west side of Building 173, in the area just north of an existing gazebo. The UST was abandoned in place approximately 22 years ago and was excavated and removed in October 1989. Analysis of soil samples collected from the excavation indicated the presence of petroleum hydrocarbon constituents.

2.2 SITE GEOLOGY

Soil borings advanced during previous site investigations have encountered three main soil units within the first 25 feet below ground surface (bgs). Dense, clayey sand

Figure 2.1



ROBINS AIR FORCE BASE
SITE PLAN

PARSONS ENGINEERING SCIENCE, INC.

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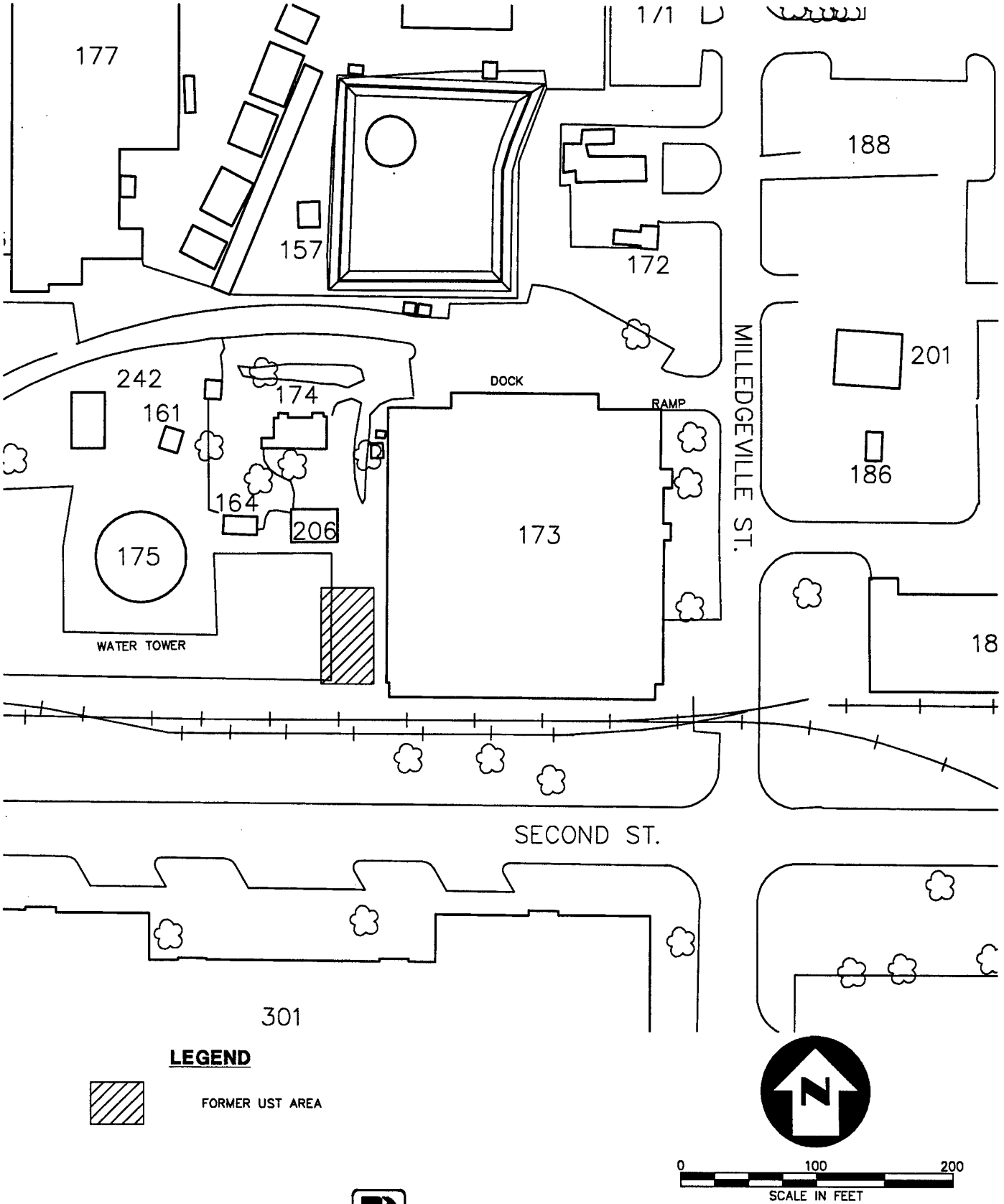
SITE LOCATION MAP
BUILDING 173 - FORMER DIESEL UST SITE
ROBINS AFB, GEORGIA



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was encountered to depths of approximately 5 feet bgs; coarse sand and gravel to approximately 25 feet bgs; and stiff, tannish white clay was encountered at depths greater than 25 feet bgs. All borings were terminated in the stiff clay layer (WR-ALC, 1990).

2.3 SITE HYDROGEOLOGY

No monitoring wells were installed during the site characterization investigation of the former UST at Building 173. Soil borings advanced to depths of approximately 25 feet bgs did not encounter groundwater. Boring logs from the installation of monitoring wells in the vicinity of Building 173 in December 1986 and January 1987 indicate that saturated soils were encountered at depths ranging from 27 to 40 feet bgs. The static water level in these wells in April 1987 ranged from approximately 27 to 31 feet below ground surface.

In July 1995, groundwater samples were collected at the site using a Geoprobe® environmental sampling rig. Groundwater level readings taken in the temporary Geoprobe® sampling locations and in existing wells in the area indicated a groundwater flow direction to the east-northeast. On site, the groundwater table was encountered at depths ranging from 38 to 39 feet bgs.

2.4 PREVIOUS INVESTIGATIONS

2.4.1 UST Removal: 1989

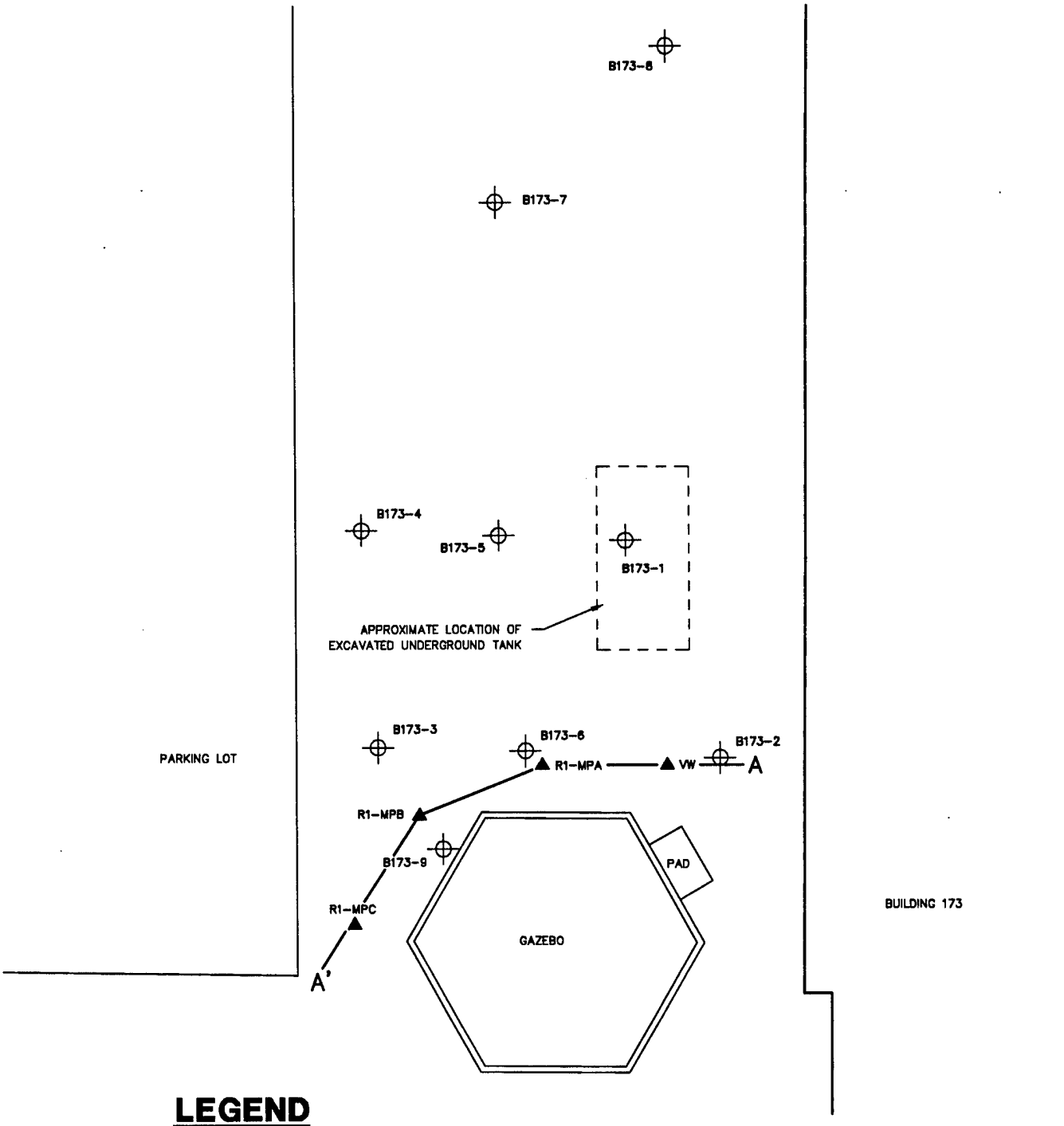
The 1,500-gallon diesel UST at Building 173 was discovered in September 1989, and excavated and removed in October 1989. Upon discovery, the tank was full of water with a small amount of light non-aqueous phase liquid (LNAPL) floating on the water (WR-ALC, 1990). At least one soil sample was collected during the tank removal effort. Analysis of this sample indicated the presence of hydrocarbons at a concentration over 12,000 milligrams per kilogram (mg/kg) as total petroleum hydrocarbons (TPH) {WR-ALC, 1989}.

2.4.2 Site Characterization Investigation: 1990

A site characterization investigation was initiated in January 1990 to confirm the presence of hydrocarbons in the subsurface soils at the site. Nine soil borings were advanced to depths of 25 feet bgs in the area of the former UST at Building 173 (Figure 2.3). Soil samples were collected from seven of the nine borings and were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX). Four samples were collected from boring B173-1, located through the center of the former tank pit. Samples were collected at 5-foot intervals beginning at 8.5 feet bgs. Samples were collected from six of the eight remaining borings (one sample per boring) at depths ranging from 8.5 to 15 feet bgs.

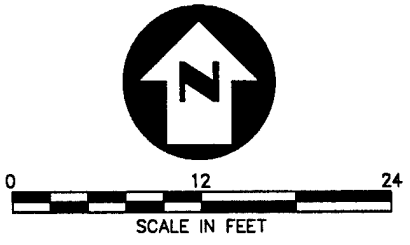
The cleanup level of 20 mg/kg for BTEX (as specified in the Georgia UST regulations in force during the investigation) was exceeded in one sample submitted for analysis. This sample (173-B1-2) was collected from boring B173-1 at a depth of 8.5 to 10 feet bgs. Xylenes were present in the sample at a concentration of 89.42 mg/kg. Benzene, toluene, and ethylbenzene concentrations in sample 173-B1-2 were below detection limits. Soil boring sample results are summarized in Table 2.1.

SOIL BORING, VENT WELL, AND MONITORING POINT LOCATION MAP
BUILDING 173 - FORMER DIESEL UST SITE
ROBINS AFB, GEORGIA



LEGEND

▲ VW	Vent Well Location
▲ R1-MPA	Monitoring Point Location
⊕ B173-1	Soil Boring Location
A ——— A'	Location of Geologic Cross-Section



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2.4.3 Re-Excavation and Backfill: 1992

Re-excavation of the tank pit and surrounding soil was performed at the site in March 1992 to remove hydrocarbon-impacted soils from the site. During excavation activities, soils were screened with an organic vapor analyzer to determine the extent of contamination. Approximately 200 cubic yards of contaminated soil were removed from the site and disposed of at Button Gwinnett Landfill in Lawrenceville, GA. Contaminated soil on the south end of the excavation could not be removed without undermining the foundation of the gazebo located on site.

Nine soil samples were collected from the excavation pit, 2 from the excavation floor and 7 from the excavation side walls. BTEX and TPH concentrations exceeded clean up levels specified in the Georgia UST regulations in force during the investigation (20 mg/kg and 100 mg/kg, respectively) in two of the sidewall samples (#6 and #7) collected at the south end of the excavation. BTEX was detected in sample #6 and #7 at concentrations of 258.17 mg/kg and 46.95 mg/kg, respectively. The TPH concentrations in sample #6 and #7 were 22,600 mg/kg and 3,670 mg/kg, respectively. TPH also exceeded clean up levels in the two samples collected from the tank bed. Sample #1 had a TPH concentration of 122 mg/kg and sample #2 had a TPH concentration of 187 mg/kg. Soil sampling results are summarized in Table 2.2.

2.4.4 Bioventing: 1992-1996

Beginning in August 1992, Battelle conducted bioventing pilot testing activities at the site of the former diesel fuel UST at Building 173. As part of the test, one vent well (VW) and three monitoring points (MPs) were installed at the site. VW and MP locations are shown in Figure 2.3 and in the cross section on Figure 2.4. Two soil samples were collected from the VW borehole and one soil sample was collected from R1-MPA. Detailed pilot testing procedures and results are presented in the Interim Report for Bioventing Field Initiative at Robins AFB, GA (Battelle, 1993). Results of the soil samples collected during the installation of the VW and MP borings indicated total BTEX concentrations ranging from 0.0037 mg/kg to 3.33 mg/kg. TPH concentrations in the soil samples ranged from 8 mg/kg to 5,700 mg/kg. Soil gas analysis indicated concentrations of total BTEX ranging from 0.244 parts per million volume per volume (ppmv) to 2.54 ppmv and TPH concentrations ranging from 27 ppmv to 300 ppmv (Table 2.3). The respiration test conducted at the site indicated relatively low oxygen utilization and carbon dioxide production rates. The biodegradation rates measured at the site were fairly consistent between monitoring points, with rates ranging from 0.38 to 0.75 milligrams of TPH degraded per kilogram of soil per day (mg/kg/day) based on oxygen utilization and from 0.31 to 0.68 mg/kg/day based on carbon dioxide production, with a good correlation between the oxygen utilization and carbon dioxide production rates. The soil gas permeability and radius of influence tests were inconclusive. Battelle selected an air blower which would provide an injection flow rate of 12 cubic feet per minute (cfm).

← 140 − 270 mg/kg/yr

Air injection at the Building 173 former diesel UST site began in September 1992. Soil gas samples collected in May 1994 showed decreases in TPH and total BTEX concentrations. TPH concentrations decreased by 99.9 percent in VW and in R1-MPA at a depth of 21.8 feet bgs (R1-MPA-21.8) and by 95 percent in R1-MPC-15.0. TPH concentrations decreased in the VW from 300 ppmv to 0.27 ppmv; from 290 ppmv to 1.7

Table 2.1
Soil Sample Analytical Results - January 1990
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

Sample ID	Depth (ft)	Benzene (mg/kg)[1]	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
173-B1-2	8.5-10	ND(2)	ND	ND	89.42
173-B1-3	13.5-15	ND	0.51	0.22	0.11
173-B1-4	18.5-20	ND	0.24	ND	0.13
173-B1-5	23.5-25	ND	ND	ND	ND
173-B2-3	13.5-15	ND	ND	ND	ND
173-B4-3	13.5-15	ND	ND	ND	ND
173-B5-2	8.5-10	ND	0.23	0.53	0.27
173-B6-2	8.5-10	ND	ND	ND	ND
173-B8-3	13.5-15	ND	0.22	ND	0.43
173-B9-3	13.5-15	ND	0.20	0.52	0.27

(1) - mg/kg - milligrams per kilogram.
(2) - ND - not detected above laboratory detection limits. Detection limits are unknown.

Source: Battelle, 1992.

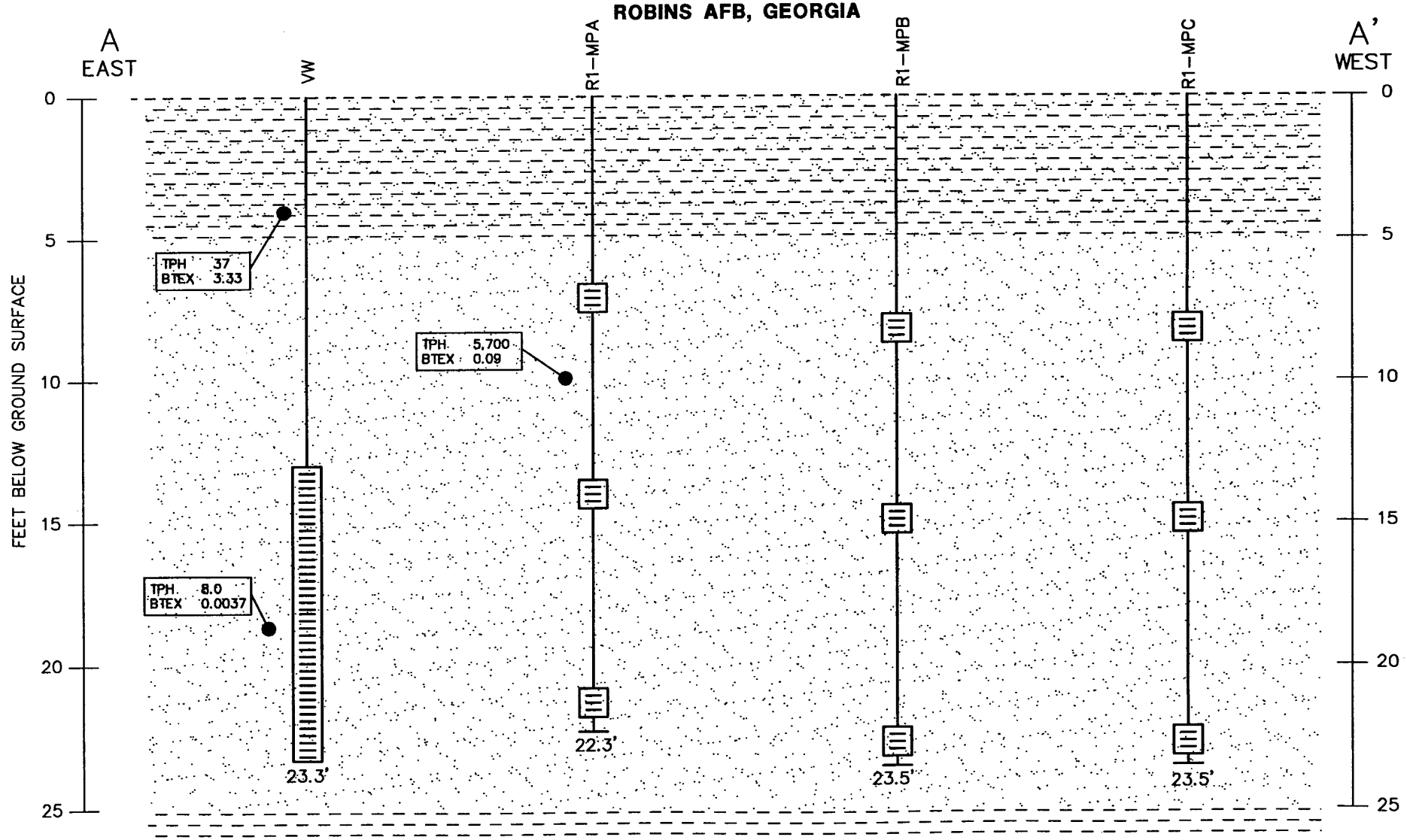
Table 2.2
Soil Analytical Results - March 1992
Building 173 - Former Diesel UST Site
Robins AFB, GA

Sample Number	Sample Depth (ft)	TPH[1] (mg/kg)[2]	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	BTEX[3] (mg/kg)
1	8	122	<0.010	<0.010	<0.010	<0.020	<0.05
2	8	187	<0.010	<0.040	<0.010	<0.020	<0.08
3	8	50	<0.010	<0.020	<0.010	<0.020	<0.06
4	8	34	<0.010	<0.020	<0.010	<0.020	<0.06
5	8	41	<0.010	<0.020	<0.010	<0.020	<0.06
6	8	22,600	<0.10	1.87	17.30	239.00	258.17
7	8	3,670	<200	0.60	3.05	43.30	46.95
8	8	24	<0.010	<0.020	<0.010	<0.020	<0.06
9	8	29	<0.010	<0.040	<0.010	<0.020	<0.08

(1) - TPH - total petroleum hydrocarbons.
(2) - mg/kg - milligrams per kilogram.
(3) - Sum of benzene, toluene, ethylbenzene, and xylene components.

Source: Battelle, 1992.

GEOLOGIC CROSS-SECTION A-A'
BUILDING 173 - FORMER DIESEL UST SITE
ROBINS AFB, GEORGIA



LEGEND

CLAY

SAND

SAMPLE LOCATIONS WITH RESULTS IN mg/kg

CLAY AND SAND

SCREENED INTERVAL

22.3' SOIL BORING LOCATION AND TOTAL DEPTH

HORIZONTAL SCALE 1" =5'
NO VERTICAL EXAGERATION

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Figure 2.4

ppmv in R1-MPA-21.8; and from 27 ppmv to 1.4 ppmv in R1-MPC-15.0. Initial total BTEX concentrations measured in the soil gas samples collected in August 1992 were relatively low. Soil gas samples collected in May 1994 showed a decrease in total BTEX in the VW from 2.54 ppmv to below detection limits; from 0.917 ppmv to 0.126 ppmv in R1-MPA-21.8; and from 0.244 ppmv to 0.212 ppmv in R1-MPC-15.0.

Total BTEX concentrations in soil samples collected in June 1995 showed little variation from those collected in August 1992. Initial total BTEX concentrations were 3.33 mg/kg (VW-4.0), 0.0037 mg/kg (VW-18.5), and 0.09 mg/kg (R1-MPA-8.5). Samples collected in June 1995 had total BTEX concentrations of 4.2 mg/kg (VW-4.0), below detection limits (VW-18.5), and 0.36 mg/kg (R1-MPA-8.5). TPH concentrations in VW-18.5 decreased from 8.0 mg/kg to below the detection limit. In R1-MPA-8.5, TPH concentrations decreased from 5,700 mg/kg to 48.1 mg/kg. The TPH concentration in the soil sample collected from VW-4.0 increased from 37 mg/kg to 968 mg/kg. This increase in concentration may be attributable to spatial variations in TPH concentrations in the soil. A comparison of soil and soil gas analytical results from August 1992 and June 1995 is presented in Table 2.3.

Because of the relatively low initial TPH and BTEX concentration at the former diesel UST site, and the effects of the bioventing system, it is expected that the site has been remediated to within regulatory cleanup levels. It is anticipated that BTEX and polynuclear aromatic hydrocarbon (PAH) concentrations are below GA EPD Soil Threshold Levels (STLs). Therefore, it is anticipated that the results of the site closure soil sampling described in Section 4 will support site closure.

2.4.5 Groundwater Investigation

The GA EPD letter to Col. Marshall of Robins AFB, dated December 21, 1994, stated that three monitoring wells were required to check the remediation progress at Building 173 UST removal site. Permission was granted to Robins AFB by the GA EPD to use Geoprobe® sample locations instead of installing permanent monitoring wells.

In July 1995, three groundwater samples were collected from the three Geoprobe® sampling locations at the site (Figure 2.5). Groundwater samples were collected from depths ranging from 44 to 48 feet bgs and analyzed by an on-site laboratory for volatile organic compounds (VOCs). Samples for TPH analysis were shipped off-site to Pace Laboratories for analysis. BTEX constituents in each of the groundwater samples collected were below the allowable Federal maximum contaminant levels (MCLs) for drinking water. TPH was below the detection limit in each of the groundwater samples analyzed. A duplicate sample for VOCs was sent to Pace Laboratories for analysis and results indicated BTEX constituents were below detection limits.

Table 2.3
Soil and Soil Gas Sample Results
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

	Sample Location					
	VW		MPA-21.8'		MPC-15.0'	
Analyte (units)	Aug-92	May-94	Aug-92	May-94	Aug-92	May-94
Hydrocarbons in Soil Gas						
TPH[1] (ppmv)[2]	300	0.27	290	1.7	27	1.4
Benzene (ppmv)	<0.0040	<0.0020	<0.0020	0.067	<0.0020	0.19
Toluene (ppmv)	0.025	<0.0020	0.052	0.02	0.0060	0.012
Ethylbenzene (ppmv)	0.31	<0.0020	0.055	<0.0020	0.14	<0.0020
Xylenes (ppmv)	2.2	<0.0020	0.81	0.039	0.098	0.01
BTEX (ppmv)	2.535	<0.0080	0.917	0.126	0.244	0.212

	VW-4.0'		VW-18.5'		MPA-8.5'	
	Aug-92	Jun-95	Aug-92	Jun-95	Aug-92	Jun-95
Hydrocarbons in Soil						
TPH (mg/kg)[3]	37	968	8.0	<9.97	5,700	48.1
Benzene (mg/kg)	<0.29	<0.050	<0.00070	<0.050	<0.00070	<0.049
Toluene (mg/kg)	<0.33	<0.050	<0.00080	<0.050	0.0020	<0.049
Ethylbenzene (mg/kg)	0.33	2.4	<0.00060	<0.050	0.0090	<0.049
Xylenes (mg/kg)	3	1.8	0.0037	<0.13	0.0790	0.36
BTEX[4] (ppmv)	3.3	4.2	0.0037	<0.28	0.09	0.36

(1) - TPH - total petroleum hydrocarbons.

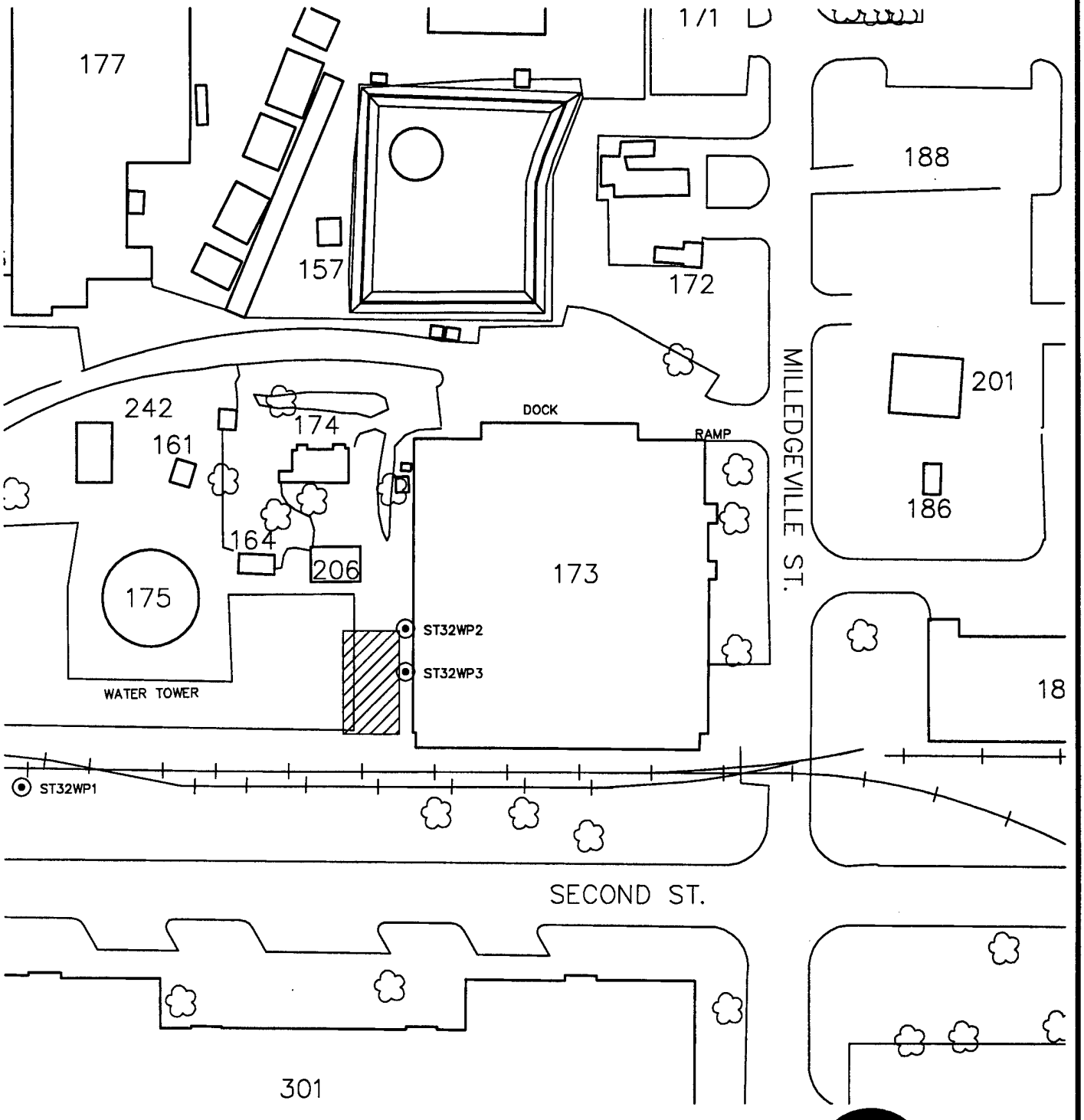
(2) - ppmv - parts per million, volume per volume.

(3) - mg/kg - milligrams per kilogram.

(4) - Sum of benzene, toluene, ethylbenzene, and xylenes components.

Source: Battelle, 1995.

GEOPROBE SAMPLING LOCATIONS - GROUNDWATER
BUILDING 173 - FORMER DIESEL UST SITE
ROBINS AFB, GEORGIA



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3. SITE CLOSURE REQUIREMENTS

In January 1995, the Georgia Rules for Underground Storage Tank Management (Amended) were adopted by the Board of Natural Resources of the State of Georgia. These rules were filed in the office of the Secretary of State on or about February 1, 1995 and became effective 20 days after the filing date. The GUST Rules provide assessment and corrective action guidance, including numerical cleanup goals, for sites that contain or have contained an UST.

3.1 SITE CLOSURE REQUIREMENTS

In the GA EPD guidance document entitled, "So You Want to Close An UST?" site-specific criteria for obtaining "No Further Action Required (NFAR) Status" are provided. NFAR status can be achieved if the analytical results, from samples taken prior to or following excavation, indicate one of the following:

- BTEX, PAHs, and TPH are below laboratory detection limits (BDL) in the soil; or
- BTEX and PAHs are BDL in the soil and TPH in soil is vertically delineated to BDL above the groundwater table; or
- BTEX and PAHs are above detection limits in the soil but below Table A Soil Threshold Levels listed in the GUST Rules and TPH in soil is BDL or is vertically delineated to BDL above the groundwater table; or
- BTEX and PAHs are above detection limits but below Table B Soil Threshold Levels listed in the GUST Rules, a water supply survey indicates that there are no potential receptors within the applicable radii, and TPH in soil is BDL or is vertically delineated to BDL above the groundwater table; or
- BTEX and PAHs are less than Table A Soil Threshold Levels listed in the GUST Rules, TPH is not vertically delineated to BDL above the groundwater table because groundwater is encountered in the boring or the excavation, and the water sample does not contain BTEX or PAHs above Federal or State MCLs; or
- BTEX and PAHs are less than Table B Soil Threshold Levels listed in the GUST Rules, TPH is not vertically delineated to BDL above the groundwater table because groundwater is encountered in the boring or the excavation, the water sample does not contain BTEX or PAHs above In-Stream Water Quality Standards, and the water supply survey indicates that there are no water supplies within the applicable radii.

The proposed sampling and analysis program includes soil sample analysis for BTEX, PAHs, and TPH, and groundwater sample analysis for BTEX and PAHs. Based on analytical results from previous investigations, it is anticipated that the NFAR status requirements will be achieved through satisfaction of one or both of the following NFAR scenarios:

- BTEX and PAHs are above detection limits in the soil but below Table A Soil Threshold Levels listed in the GUST Rules and TPH in soil is BDL or is vertically delineated to BDL above the groundwater table; or
- BTEX and PAHs are less than Table A Soil Threshold Levels listed in GUST Rules, TPH is not vertically delineated to BDL above the groundwater table because groundwater is encountered in the boring or the excavation, and the water sample does not contain BTEX or PAHs above Federal or State MCLs.

3.2 STATE SOIL THRESHOLD LEVELS

Soil Threshold Levels (STLs) for petroleum-impacted sites are specified for BTEX and PAH constituents and determine whether a site enters corrective action based on soil analytical results. STLs vary depending on the geographic location of the site within the State and the distance to the nearest groundwater withdrawal point or surface water body. Geographically, UST Site 173 is located within the Average or Higher Groundwater Pollution Susceptibility Area. A public water supply well, located approximately 120 feet northwest of the site, is the nearest groundwater withdrawal point. Based on these conditions, the STLs presented in Table 3.1 are applicable.

3.3 STATE MAXIMUM CONTAMINANT LEVELS IN DRINKING WATER

The applicable groundwater quality standards for the 173 UST Site are State or Federal MCLs for drinking water. The GUST Rules specify that BTEX and PAH concentrations in groundwater should not exceed the applicable State MCLs for sites located within 500 feet of a public water supply withdrawal point. The State and Federal MCLs for BTEX and PAH compounds are listed in Table 3.2. If BTEX and PAH concentrations in groundwater are less than or equal to the State or Federal MCLs, the site closure requirement for groundwater will be satisfied.

Table 3.1

Applicable Soil Threshold Levels[1]
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

Parameter	Average or Higher Groundwater Pollution Susceptibility Area [2] ≤500 ft to withdrawal Point
Volatile Organic Compounds (mg/kg)[3]	
Benzene	0.005
Toluene	0.400
Ethylbenzene	0.370
Xylenes (total)	20.00
Polynuclear Aromatic Hydrocarbons (mg/kg)	
Acenaphthene	NA[4]
Anthracene	NA
Benz(a)anthracene	NA
Benzo(a)pyrene	0.660
Benzo(b)fluoranthene	0.820
Benzo(g,h,i)perylene	NA
Benzo(k)fluoranthene	1.60
Chrysene	0.660
Dibenz(a,h)anthracene	1.50
Fluoranthene	NA
Fluorene	NA
Indeno(1,2,3-c,d)pyrene	0.660
Naphthalene	NA
Phenanthrene	NA
Pyrene	NA

(1) - As specifed in Table A of GUST Rule 391-3-15-.09.
(2) - Where public water supplies exist within 2.0 miles and/or non-public supplies exist within 0.5 miles. Based on an assumed distance of 0.5 feet between contaminated soils and the water table.
(3) - mg/kg - milligrams per kilogram.
(4) - NA - not applicable. The health-based threshold level exceeds the expected soil concentration under free product conditions.

Table 3.2
State and Federal Maximum Contaminant Levels
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

Parameter	State Maximum Contaminant Level[1] (mg/L)[3]	Federal Maximum Contaminant Level[2] (mg/L)
Volatile Organic Compounds		
Benzene	0.005	0.005
Toluene	1.0	1
Ethylbenzene	0.7	0.7
Xylenes (total)	10.0	10
Polynuclear Aromatic Hydrocarbons		
Acenaphthene	NA[4]	NA
Anthracene	NA	NA
Benz(a)anthracene	NA	NA
Benzo(a)pyrene	0.0002	0.0002
Benzo(b)fluoranthene	NA	NA
Benzo(g,h,i)perylene	NA	NA
Benzo(k)fluoranthene	NA	NA
Chrysene	NA	NA
Dibenz(a,h)anthracene	NA	NA
Fluoranthene	NA	NA
Fluorene	NA	NA
Indeno(1,2,3-c,d)pyrene	NA	NA
Naphthalene	NA	NA
Phenanthrene	NA	NA
Pyrene	NA	NA

(1) - GA EPD, 1994. Rules for Safe Drinking Water, Chapter 391-3-5-.18, March.
(2) - USEPA, 1995. Drinking Water Regulations and Health Advisories. May.
(3) - mg/L - milligrams per liter.
(4) - NA - not applicable. No MCL has been established.

4. SITE CLOSURE SAMPLING AND ANALYSIS PLAN

The following SAP describes the borehole locations, soil and groundwater sampling procedures, and analytical methods proposed to collect sufficient data to support site closure. This plan has been prepared and will be implemented by, or under the direct supervision of, a Georgia Professional Geologist as required by the GUST Rules.

4.1 BOREHOLE INSTALLATION AND SOIL SAMPLING

4.1.1 Proposed Borehole Locations

As described in Section 2, this site was characterized during several past site investigations. Sampling results during excavation activities indicated that BTEX and TPH contamination was present in the soils on the south end of the excavation along the sidewalls at depths of approximately 8 ft bgs. TPH contamination was also present in the two tank bed samples collected at depths of approximately 15 ft bgs during excavation activities and in the soil boring sample collected from a depth of 8.5 to 10 feet bgs. Parsons ES proposes to advance six additional boreholes. The locations of the proposed borings are presented in Figure 4.1. One borehole will be advanced in the area of the former UST location; one will be advanced next to the existing VW; one will be advanced next to monitoring point R1-MPA; and one will be advanced between monitoring points R1-MPB and R1-MPC (see Figure 4.1). The remainder of the borings will be located as to delineate the lateral extent of hydrocarbons in the soil. Borings will be terminated above the groundwater table at a depth of approximately 35 feet. A copy of the borehole advancement logs will be retained onsite for review by the base point-of-contact.

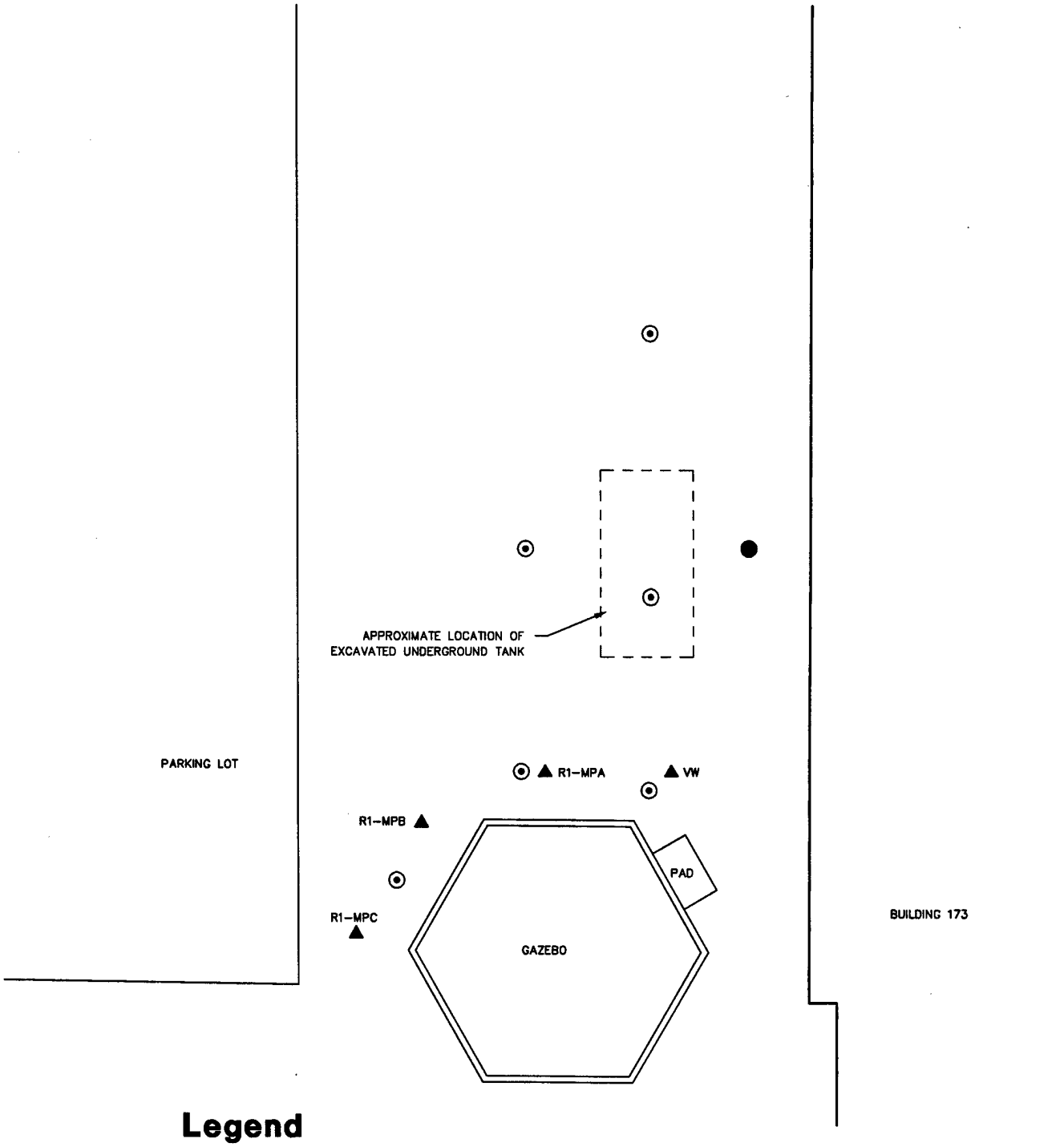
4.1.2 Soil Sample Collection

Soil samples will be collected at 5-foot intervals from each boring for headspace screening, lithologic description, and chemical analysis. Boreholes will be advanced using a Geoprobe® sampling rig. Soil samples will be collected using direct-push methods with hollow soil sampling barrels. The sample barrel will be lined with an acetate liner. The lined sampler will be driven the length of the barrel or until sampler refusal. Upon retrieval of the filled sampler, the liner will be removed and the ends will be covered with Teflon® sheeting, then sealed with plastic caps.

A small section of the retrieved soil core will be used for lithologic characterization and headspace screening. A portion of the soil in the liner will be placed in a Ziploc® bag for headspace screening. Boreholes will be logged by a Parsons ES geologist. Soil types will be classified according to the Unified Soil Classification System (USCS) and described in accordance with the standard Parsons ES soil description format.

The headspace analysis portion of the sample will be allowed to equilibrate for approximately 10 minutes. The bag will then be pierced with the detector probe of the photoionization meter and a headspace reading will be taken and recorded on the boring log. Headspace readings will be used to evaluate the relative concentration of

PROPOSED SOIL BORING LOCATIONS
BUILDING 173 - FORMER DIESEL UST SITE
ROBINS AFB, GEORGIA



Legend

▲ VW	Vent Well Location
▲ R1–MPA	Monitoring Point Location
⊙	Proposed Geoprobe® Sampling Location
●	Proposed Groundwater Sampling Location

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hydrocarbons in the soil samples and aid in laboratory sample selection. A total of 12 soil samples (2 samples per boring) will be submitted for laboratory analysis. From each boring, the sample exhibiting the maximum headspace reading will be selected for laboratory analysis. The second sample for laboratory analysis will be selected by the field geologist and will be from either the bottom of the boring or depth ranges sampled in previous investigations.

4.1.3 Soil Sample Analysis

Proposed sample analytical methods and detection limits are presented in Table 4.1. All samples will be analyzed by a State of Georgia-certified and AFCEE-approved Laboratory.

Parsons ES proposes to analyze soil samples by EPA Method SW8020 for BTEX, by EPA Method SW8310 for PAHs, and by EPA Method 8015 for TPH (diesel range organics) in accordance with GA EPD guidelines (GA EPD, 1995b).

4.2 GROUNDWATER SAMPLING

This section describes groundwater sample collection using the Geoprobe® apparatus and laboratory analysis. One groundwater sample will be collected immediately east of the former tank pit (See Figure 4.1) and used to investigate groundwater quality in the surficial aquifer.

4.2.1 Groundwater Sample Collection

The Geoprobe® system is a hydraulically powered percussion/probing machine used to advance sampling tools through unconsolidated soils. This system provides for the rapid collection of groundwater grab samples at shallow depths while minimizing the generation of investigation-derived waste materials.

The sampling depth and interval will be specified prior to driving the Geoprobe® pushrod into the ground. The Parsons ES field scientist will verify the sampling depth by measuring the length of each pushrod prior to insertion into the ground. A drive tip fitted with a slotted steel screen will be placed on the tip of the pushrod, and the rod will be pushed into the ground using the Geoprobe® apparatus. After reaching the desired depth, the pushrod will be raised 1 to 2 feet to expose the screen and to allow water to percolate into the end of the hollow pushrod. Water samples will be collected from water entering the downhole, slotted end of the pushrod through the screen with a peristaltic pump or bailer apparatus.

After sampling is complete, the sampling location will be restored as closely to its original condition as possible. The hole created by the Geoprobe® in sandy soils tends to cave in soon after extraction of the drive sampler. However, if the test hole remains open after extraction of the Geoprobe® rod it will be sealed with bentonite chips, pellets, or grout to eliminate any creation or enhancement of contaminant migration pathways to the groundwater.

Table 4.1
Laboratory Analytical Methods and Detection Limits
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

EPA Analytical Method	Project Reporting Limit for Soil (mg/kg)[1]	Project Reporting Limit for Groundwater (µg/L)[2]
EPA SW8020 (BTEX)[3]		
Benzene	0.001	.2
Toluene	0.002	2
Ethylbenzene	0.002	2
Xylenes	0.002	2
EPA SW8310 (PAHs)[4]		
Acenaphthene	1.2	18
Anthracene	0.44	0.6
Benz(a)anthracene	0.009	0.13
Benzo(a)pyrene	0.015	0.12
Benzo(b)fluoranthene	0.012	0.18
Benzo(g,h,i)perylene	0.05	0.76
Benzo(k)fluoranthene	0.011	0.17
Chrysene	0.1	1.5
Dibenz(a,h)anthracene	0.02	0.3
Fluoranthene	0.14	2.1
Fluorene	0.14	2.1
Indeno(1,2,3-c,d)pyrene	0.03	0.43
Naphthalene	1.2	18
Phenanthrene	0.42	6.4
Pyrene	0.18	2.7
EPA SW8015 (TPH - DRO)[5][6]	10	NA[7]

(1) - mg/kg - milligrams per kilogram.
(2) - µg/L - micrograms per liter.
(3) - Benzene, toluene, ethylbenzene, and total xylenes.
(4) - PAH - Polynuclear aromatic hydrocarbons.
(5) - TPH - Total petroleum hydrocarbons.
(6) - DRO - Diesel range organics.
(7) - NA - Not Applicable.

4.2.2 Groundwater Sampling

This section describes groundwater sampling. The following steps will be taken during sampling:

1) All purging and sampling equipment will be decontaminated as outlined in Subsection 4.4.2.

2) The Geoprobe® sampling point will be purged by bailing or by pumping using a peristaltic pump. Except as noted below, at least three casing volumes shall be removed from the sampling point before it is sampled. The casing volume is defined as the volume of submerged sampling point casing.

3) The temperature, pH, and specific conductivity of the groundwater will be measured and recorded after removing each casing volume during purging. The sample may be collected after three casing volumes have been removed and the temperature, pH, and conductivity have stabilized. Stabilization is defined as follows: temperature ± 1° C, pH ± 0.1 units, and conductivity ± 5 percent. If these parameters do not stabilize, the sample will be taken after six casing volumes have been removed. The total number of casing volumes removed will be recorded.

4) Samples will be collected as soon as possible after purging the well. When a sampling point is pumped dry before three casing volumes have been removed, the sample will be collected as soon as a sufficient amount of fluid has reentered the sampling point.

5) Samples to be analyzed for volatile constituents will be collected with a decontaminated stainless steel or Teflon® bailer, with a new nylon cord attached. The nylon cord will be used once and discarded. Care will be taken when lowering the bailer not to agitate the water surface. If conditions permit, peristaltic pump equipped with new high density polyethylene (HDPE) tubing will be used to collect the groundwater samples. The HDPE tubing will be used once and discarded. The water sample will be carefully transferred into sample bottles containing the appropriate preservatives. Volatile organics samples will be taken from the bailer first. The filled vials will be inverted and tapped lightly to locate air bubbles. If air bubbles are observed in the VOC sample, the top 10% of the sample may be refilled up to three attempts. A new vial containing fresh preservative will be used thereafter.

6) The remaining sample containers will be filled by collecting water with a bailer (or with a peristaltic pump) and pouring equal aliquots of the water into each sample until all containers are full.

7) Groundwater sampling data will be recorded in the field notebook or groundwater sampling form.

4.2.3 Groundwater Sample Analysis

Proposed sample analytical methods and detection limits are presented in Table 4.1. All samples will be analyzed by a State of Georgia-certified and AFCEE-approved Laboratory.

Parsons ES proposes to analyze the groundwater sample by EPA Method SW8020 for BTEX, and by EPA Method SW8310 for PAHs in accordance with GA EPD guidelines (GA EPD, 1995b).

4.3 QUALITY CONTROL SAMPLES

Four types of field quality control (QC) samples will be collected during this investigation. Descriptions of each sample type, as well as the frequency of collection, are summarized in Table 4.2.

4.4 EQUIPMENT DECONTAMINATION

All equipment (Geoprobe®, sampling, etc.) will be cleaned prior to entering Robins AFB property and prior to leaving the Robins AFB to ensure that no contaminants enter or leave the Base due to activities included in this investigation. To prevent potential cross-contamination of samples during the sampling process, all sampling tools and probing equipment will be decontaminated prior to site mobilization and before each sample collection. Equipment to be decontaminated will include, probe rods, sample barrels, the Geoprobe® rig as deemed necessary by the site geologist or engineer, sampling devices, and instruments. Field team members will take care to prevent samples from coming into contact with potentially contaminating substances such as tape, oil, engine exhaust, corroded surfaces, and dirt.

All on-site decontamination will be done in a staging area and field personnel will wear clean vinyl gloves during the process. Care will be taken when choosing the site of the staging area to avoid fugitive dust, fuel, oils, gasoline, organic solvents or any potential airborne source of contamination. All decontamination activities will be recorded in the field log book.

For heavily contaminated equipment, a methanol rinse or hexane rinse can be used before regular decontamination procedures. If equipment cannot be cleaned, it will be disposed of properly. If new equipment such as sample barrels and probe rods have been painted at the factory, this paint will be removed before use.

4.4.1 Downhole Equipment

Before use and between boreholes, sample barrels and other downhole equipment will be cleaned to prevent cross-contamination. Cleaning will be accomplished using a high-pressure water wash, followed by a potable water rinse. Decontamination fluids will be collected and contained in labeled 55-gallon drums.

4.4.2 Sampling Equipment

All sampling equipment will be decontaminated including stainless steel bowls, sample barrels, hand augers, bailers, submersible pumps, tubing, field instruments, and water level indicators. The procedures to be used depend on the equipment materials (e.g., glass, Teflon® or stainless steel) as well as the analyses to be conducted on the sample (e.g., metals, organics).

TABLE 4.2
Field QC Samples
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

Type	Use	Definition	Frequency
Trip Blank	Water and/or soil VOC analyses	A trip blank sample is designed to detect contamination of environmental samples during transport from the field to the lab. A trip blank is a VOC sample bottle filled in the laboratory with Type II Reagent Grade Water, transported to the site, handled like a sample, and returned to the laboratory for analysis. Trip blanks shall not be opened in the field. The trip blank for soils is the same as for water samples.	One trip blank shall accompany every cooler of soil and water samples sent to the laboratory for the analysis of VOCs. This blank shall be analyzed for VOCs only. (A total of 3 trip blanks are proposed for this site)
Equipment Blank	Water and Soil Samples	An equipment blank is designed to detect contamination of environmental samples caused by contamination of sampling equipment. An equipment blank is analyte free water that is poured into or pumped through the sampling device, transferred to a sample bottle, and transported to a laboratory for analysis.	One equipment blank shall be taken on each media. (A total of 2 rinsates are proposed for this site)
Field Duplicate	Water Samples	A field duplicate is a sample collected independently from another environmental sample, but taken at the same sampling location and at the same sampling event. The field duplicate is designed to check variability arising from sampling activities or lack of sample homogeneity.	Ten percent of all water samples shall be field duplicates. Both duplicates (e.g., the sample and the duplicate) shall be analyzed for the same parameters in the laboratory. (A total of 1 field duplicate is proposed for this site)

TABLE 4.2 - Continued
Field QC Samples
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

Type	Use	Definition	Frequency
Field Replicate	Soil Samples	A field replicate is a single sample divided into two equal parts for analysis. Replicates are often called "splits". Field replicates are designed to check variability arising from sampling activities or lack of sample homogeneities.	Ten percent of all soil and ten percent of all sediment samples shall be field replicates. Both replicates (e.g., the sample and the replicate) shall be analyzed for the same parameters in the laboratory. (A total of 2 field replicates are proposed for this site)

For decontaminating *glass or Teflon® sampling equipment:*

- Wash and scrub with a laboratory grade non-phosphate detergent (Liquinox® or laboratory grade equivalent) or Alconox® and water;
- Rinse with tap water;
- Rinse with deionized water;
- Rinse with pesticide grade isopropanol;
- Air dry;
- Wrap in oil-free aluminum foil if equipment is to be stored or transported.

Stainless steel equipment such as sample barrels, bowls, and purging equipment is decontaminated in the same manner as the glass or Teflon® equipment.

Decontamination fluids resulting from on-site decontamination will be collected and transported to the Access Road decon pad (located east of the site on Second Street) for disposal. The base point-of-contact will be notified before disposal. Any deviations from the standard decontamination protocols will be noted in the field log book.

4.5 WASTE HANDLING

Wastes that are anticipated to be generated on-site include soil cuttings, sample remnants, purge water, decontamination fluids, disposable protective clothing and sampling/packaging materials. Parsons ES will follow the methods described in this section, along with the Robins AFB Investigation Derived Waste Management Plan, for handling these wastes.

4.5.1 Sample Remnants and Soil Sampling Cuttings

Soil cuttings generated during soil sampling will be placed in US Department of Transportation (DOT)-approved, 55-gallon drums. The drums will be labeled with the site name, sampling date, borehole number, and depth intervals. To minimize cuttings disposal costs, cuttings showing no field evidence of contamination will not be drummed with contaminated cuttings (i.e., soil with above-background PID readings, petroleum odor, or discoloration). Analytical data from the samples sent to the laboratory will be used to determine proper disposal methods. Parsons ES will arrange transport of the drums. Proper disposal of residuals confirmed as contaminated waste will be coordinated by Parsons ES.

4.5.2 Purging Fluids

Water discharges associated with well purging will be containerized. The Base point-of-contact will be notified of the location of the drums, and Parsons ES will arrange for the transport of the drums to the Access Road decon pad for temporary storage pending analytical results. The analytical results for the groundwater sample obtained from the sampled well will be used to determine proper disposal of the containerized water. Disposal of the purge water may be discharged to the Robins AFB Industrial Waste Water Treatment Plant (IWWTP), pending approvals of an IWWTP representative.

4.5.3 Decontamination Fluids

Decontamination fluids from heavy equipment (e.g., Geoprobe® rig equipment) may be directly discharged to an approved sanitary sewer system from the Access Road decon pad or transported to the base industrial wastewater treatment plant, pending approval of the base point-of-contact. Parsons ES will coordinate the transport and disposal activity. Residual quantities of pesticide grade solvents (isopropanol) remaining on decontaminated sampling equipment or collected in a dedicated container will be allowed to volatilize to the atmosphere. Large quantities will be containerized for disposal.

4.6 WELL ABANDONMENT

If site closure is granted by Georgia EPD, the existing VW and MPs will be abandoned in accordance with guidance provided in the Georgia EPD Manual for Groundwater Monitoring (GA EPD, 1991). The general procedure for abandonment of shallow wells includes the three steps described below.

1. Removal of obstructions in the well that could interfere with the plugging operation and thorough flushing of the well to purge residual drilling fluids and other fine detritus;
2. Removal of the well casing (where practical) to ensure placement of an effective seal - as a minimum when the casing is not properly grouted, the upper 20 feet of casing must be removed; and
3. Sealing of the well with an impermeable filler such as neat cement.

4.7 DEMOBILIZATION

Prior to demobilization, a walk-through of the site will be conducted by Parsons ES and the base point-of-contact to ensure cleanup and site restoration has been achieved.

5. SITE CLOSURE REPORT FORMAT

Following receipt of the laboratory analytical results, a report will be prepared and submitted to the Georgia Department of Natural Resources Environmental Protection Division, Robins AFB, and AFCEE.

It is anticipated that the soil and groundwater analytical results will be below the State action levels. The report will be presented as a Site Closure Report and will be prepared in accordance to the Closure Report Form (GA EPD, 1995b). The report will be prepared under the direction of a Georgia Professional Geologist and will contain the following information at a minimum:

- Site figures showing final borehole locations;
- Summary of field activities;
- Assessment of analytical results in comparison to State criteria;
- Laboratory analytical reports and chain-of-custody forms;
- Borehole logs; and
- Conclusions and recommendations.

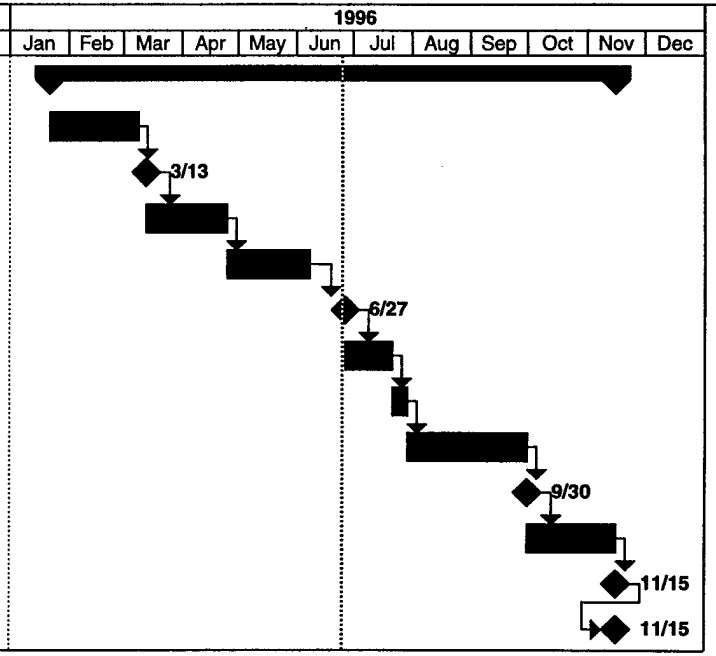
In the unlikely event that the soil and/or groundwater analytical results exceed the applicable State action levels, the report will be presented as a Site Investigation Summary Report and recommendations for further remedial action will be provided.

6. PROJECT SCHEDULE

The overall schedule for completing the tasks described in this SAP is presented in Figure 6.1. The schedule includes activities through the completion of the final Closure Sampling report. Field work will begin upon approval of the final SAP by Robins AFB, AFCEE, and GA EPD.

Schedule of Activities
Building 173 - Former Diesel UST Site
Robins AFB, Georgia

ID	Task Name	Duration	Start	Finish
1	**Building 173 - Former Diesel UST Site 173**	**215d**	**1/22/96**	**11/15/96**
2	Draft SAP Preparation	35d	1/22/96	3/8/96
3	Deliver Draft SAP to AFCEE and Robins AFB	0d	3/13/96	3/13/96
4	Review and Comment	31d	3/13/96	4/24/96
5	Regulatory Review	32d	4/25/96	6/7/96
6	Deliver Final SAP to AFCEE and Robins AFB	0d	6/27/96	6/27/96
7	Field Mobilization	17d	6/27/96	7/21/96
8	Field Sampling	6d	7/22/96	7/29/96
9	Draft Report Preparation	45d	7/30/96	9/30/96
10	Deliver Draft Report to AFCEE and Robins AFB	0d	9/30/96	9/30/96
11	Review and Comment	34d	10/1/96	11/15/96
12	Deliver Final Report to AFCEE, Robins AFB, and GA EPD	0d	11/15/96	11/15/96
13	Project Complete	0d	11/15/96	11/15/96



Project:
Date: 6/25/96

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

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7. SITE MANAGEMENT

This section identifies the primary site contacts, necessary Base support, and contingency plans involved with site management.

7.1 CONTACTS

Prior to initiation of the field effort, the Parsons ES Project Manager (PM) will contact the AFCEE contact to plan a schedule for field activities. The location of soil borings will be discussed with the Base contact in order to minimize the disruption of Base activities and to determine the locations of underground utilities in the vicinity of the site.

The primary contacts are as follows:

Personnel	Phone Number	Responsibility
Captain Ed Marchand	(210) 536-4364	AFCEE Contact
Mr. Dale Fox	(912) 926-0983	Robins AFB Contact
Mr. Fred Otto	(912) 926-0983	Robins AFB Geologist
SSgt. Lemuel Campbell	(912) 926-0983	Robins AFB Project Inspector
Mr. John Ratz	(303) 831-3100	Parsons ES Project Manager
Mr. Steve Ratzlaff	(404) 235-2361	Parsons ES Site Manager

The Parsons ES Site Manager will serve as the primary Parsons ES contact for personnel coordination. However, field team leader, appointed by the Parsons ES Site Manager, may also be responsible for arranging site access.

7.2 BASE SUPPORT

The Base will provide the following support during field activities:

- **Provide Site Access to Field Team Members.** The Base contact will ensure daily access to the site through arrangements with Robins AFB Security Personnel.
- **Coordinate Badge and Vehicle Passes.** The base point-of-contact will coordinate with Robins AFB Security Personnel for the issue of personnel badges and vehicle passes for each field team member. AFMC Form 496, Application for AFMC Identification Card will be completed by the Parsons ES field team members. Each field team member will be provided with a badge and vehicle pass (if needed) as well as a letter stating the purpose of the sampling effort.
- **Provide Scheduling Information.** The Base point of contact will notify Parsons ES of any Base activities which may adversely affect field activities and/or impact the sampling schedule.

- **Provide Base Notification.** The Base point of contact should ensure that all pertinent parties (e.g., industrial shop personnel, military police, Base Commander's Office) are notified in advance of the drilling and sampling activities.
- **Provide Water Hook-ups and a Central Decontamination Area.** In order to provide water for the purpose of drilling, decontamination, and personnel/equipment cleanup, the Base point of contact will arrange for access to a potable water supply at the site or on the Base. In addition, the Base will provide a convenient paved decontamination area for cleaning heavy equipment. A 110/115 VAC electrical outlet must be available within 100 feet of the paved area for high pressure washer hookup. Non-hazardous water wastes from the decontamination area will be transported to the Access Road decon pad for temporary storage pending coordination of discharge to the base industrial wastewater treatment plant. A site-specific decontamination area will also be established at the site for smaller equipment, instrument, and personnel decontamination.
- **Provide Access to Office Equipment.** Parsons ES will need access to a class A telephone (with long distance capability) and a copy machine to allow for efficient copying of chain-of-custody records and other field forms, as well as distribution of any memos to ensure site coordination.
- **Assign Accumulation Points.** Any drilling cuttings or well purge fluids generated from the site work that are suspected of being hazardous will be moved to predesignated accumulation points to be disposed of by the Base.
- **Provide Underground Utility Clearance/Digging Permits.** Before any work, each proposed location must be checked for underground utilities by Base personnel or utility representatives, or both. The base point-of-contact will ensure that field team has an approved AF Form 103, the Base Civil Engineering Work Request Form, before drilling. A copy shall be kept at the site where the drilling work will be conducted. The field crew will request clearance of locations at least one week before commencement of intrusive site work. The Base will issue digging or other appropriate permits prior to commencement of drilling operations.

7.3 CONTINGENCY PLANS

This subsection describes steps which will be taken by Parsons ES to minimize delays during the investigations. Potential problems which could be encountered during the field effort include:

- Access/coordination difficulties;
- Equipment breakdowns;
- Conflicts with planned sampling locations; and/or
- Abnormal site conditions. (i.e., heavy rain, thunderstorm, etc.).

- Digging/Excavation Permit delays

7.3.1 Access/Coordination Contingencies

Anticipated support needs were outlined in Section 7.2. In the event that site access difficulties arise, the Base point of contact will be contacted to resolve the problem. The Base point of contact will also be notified if additional support needs are identified during the field effort. The Parsons ES Site Manager and field team leader will be responsible for notifying the Base point of contact and/or other designated personnel (e.g., designated site escorts/contacts) of access or coordination difficulties.

7.3.2 Equipment Contingencies

In the event of operation and maintenance problems with the instruments, the following procedures will be followed:

- Contact the Field Team Leader;
- Refer to the instrument's instruction book for troubleshooting procedures; and
- Contact the manufacturer and/or supplier.

If necessary, backup instruments will be obtained. However, any such decisions must be made by the Parsons ES Site Manager, after consideration of other potential solutions. Equipment will be maintained and extra batteries will be carried in order to avoid downtime due to minor problems.

7.3.3 Sampling Location Contingencies

During the field effort, certain chosen sampling locations may be inaccessible due to site conditions. When the conditions can be adjusted (e.g., unlocking a gate or moving a vehicle), the Parsons ES Site Manager and/or field team leader will contact the Base point-of-contact and/or site escort to arrange for access to the sampling location. When the sampling location remains inaccessible (e.g., due to overhead wires or underground cables), a sample will be taken as close as possible to the designated location. If all areas in the vicinity of the sampling location are affected, the Parsons ES Site Manager or Parsons ES Project Manager will contact the AFCEE contact to revise the sampling strategy.

7.3.4 Abnormal Site Condition Contingencies

If abnormal site conditions are encountered which adversely affect site activities, the following procedures will be followed:

- The Base point-of-contact will be notified of the conditions (e.g., Base mowing grass, unexpected construction).
- If the abnormal site conditions cannot be altered, an alternative sampling site will be selected.
- If the abnormal site conditions affect all sampling locations and/or if moving to another sampling site will adversely impact the project schedule

or cost, both the Base point-of-contact and the AFCEE contact will be notified. A decision will then be made as to the best course of action which will ensure quality project completion in a timely and cost efficient manner. Abnormal or unanticipated site conditions which adversely affect personnel health and safety are to be covered in the project Health and Safety Plan.

7.3.5 Digging/Excavation Permit Delays

To ensure digging/excavation permits are issued prior to the planned digging/excavation date, the following base procedure will be followed:

Digging permits (AF Form 103) are obtained at 0800 Monday mornings, only, in Building 272. The Contractor, along with the technical representative, shall meet with Civil Engineering utility personnel at this time to make all necessary arrangements for the excavation permit before any digging. The Contractor will be given instructions on how to prepare and properly complete an AF Form 103. This includes coordination before beginning any work involving digging/excavation and location of buried structures and utility lines. Before getting signatures, a drawing will be provided indicating the full extent of digging/excavation (width/depth/length of trench or hole). Civil Engineering utility personnel will meet with the Contractor at the site and locate their underground utility lines and buried structures that might be affected by any digging/excavation. No digging will be allowed until the permit is approved by all parties (three day maximum). The digging/excavation permit shall be effective only for the time period indicated by the final signature authority. Recoordination of the AF Form 103 with all organizations and the technical representative shall be required for any additional time required after expiration of the original time period. No digging/excavation shall be done after 1600 hours on weekdays or anytime on weekends unless prior approval is obtained.

7.3.6 Site Health and Safety Plan

Parsons ES will provide a Health & Safety Plan (under separate cover) to the base point-of-contact for review prior to mobilizing to the Robins AFB. The plan will include the following information:

- Provide an index of all hazardous materials to be introduced to the site;
- Plan for protecting personnel and property during the transport, storage and use of the materials;
- Procedures for spill response and disposal;
- MSDSs for materials listed in the index of the plan and not required in the technical section of the Closure Sampling and Analysis Plan;
- Approved labeling system to identify contents on all containers on site; and
- Personnel training plan.

7.4 CONTROL AND DISPOSAL OF SOLID WASTES

Solid wastes generated during the field effort will be picked up and placed in covered approved containers. The containers will be moved to a pickup point or disposal area, as

directed by the base point-of-contact. The containers will be regularly emptied throughout the duration of the field effort. When handling and disposing of wastes, care will be taken to prevent contamination of the site or other areas.

Precautions will be taken to prevent spills of oil and hazardous material. In the event of a spill, the base point-of-contact will be notified immediately. Spill response shall be in accordance with 40 CFR 300 and applicable state regulations.

7.5 BASE PERSONNEL BADGES AND VEHICLE PASSES

Parsons ES will provide a completed AFMC Form 496 (1 original and 1 copy) and a letter with the following information through the base point-of-contact to 78 SPS/SPOS (62068):

- Letter on company letterhead;
- List of all employees including sub-contractors;
- Sample signatures for personnel authorized to sign AFMC Form 496 (Application for Contractor ID Credential);
- Contract Number;
- List endorsed by a company representative and the base Contracting Officer;
- Start and Stop Dates for the Contract; and
- If 5 or more company vehicles will be used at the site, a list will be prepared documenting proof of ownership, year, make, and tag number.

8. REFERENCES

Battelle. 1992. *Test Plan and Technical Protocol for a Field Treatability Test for Bioventing.* Prepared for U.S. Air Force Center for Environmental Excellence. January.

Battelle. 1993. *Interim Report for Bioventing Field Initiative at Robins Air Force Base, Georgia.* March.

Georgia Department of Natural Resources Environmental Protection Division (GA EPD). 1991. Manual for Groundwater Monitoring. July.

Georgia Department of Natural Resources Environmental Protection Division (GA EPD). 1994. *Rules for Safe Drinking Water (Revised).* March.

Georgia Department of Natural Resources Environmental Protection Division (GA EPD). 1995a. *Georgia Rules for Underground Storage Tank Management (Amended).* February.

Georgia Department of Natural Resources Environmental Protection Division (GA EPD). 1995b. *So You Want to Close an UST? -- Petroleum Releases-- (GUST-9).* August.

Warner Robins Air Logistics Center (WR-ALC). 1989. *Letter to Marlin R. Gottschalk of the Underground Storage Tank Unit of the Georgia Department of Natural Resources.* November 14.

Warner Robins Air Logistics Center (WR-ALC). 1990. *Initial Site Characterization of Tank 173-1 Site, Robins AFB, Georgia.* July 23.

United States Environmental Protection Agency (USEPA) Office of Water. 1995. *Drinking Water Regulations and Health Advisories.* May.

APPENDIX A
HEALTH AND SAFETY PLAN ADDENDUM

HEALTH AND SAFETY PLAN ADDENDUM

CLOSURE SOIL SAMPLING
BUILDING 173 - FORMER DIESEL UST SITE
ROBINS AIR FORCE BASE, GEORGIA

JUNE 1996

Prepared By

PARSONS ENGINEERING-SCIENCE, INC.
ATLANTA, GEORGIA

HEALTH AND SAFETY PLAN ADDENDUM
CLOSURE SOIL SAMPLING
BUILDING 173 - FORMER DIESEL UST SITE
ROBINS AIR FORCE BASE, GEORGIA

Prepared By

ENGINEERING-SCIENCE, INC.
57 EXECUTIVE PARK SOUTH, N.E.
SUITE 500
ATLANTA, GEORGIA

REVIEWED AND APPROVED BY:

	Name	Date
Project Manager		6/14/96
Parsons ES Health and Safety Officer		6/26/96

PROJECT CONTACTS

Parsons ES

Site Manager	Mr. Steve Ratzlaff Telephone: (404) 235-2300
Project Manager:	Mr. John Ratz Telephone: (303) 831-8100
Parsons ES Technical Director:	Mr. Doug Downey Telephone: (303) 831-8100
Parsons ES Site Health & Safety Officer:	Mr. Steve Ratzlaff Telephone: (404) 235-2300
Corporate Health & Safety Officer:	Edward Grunwald, C.I.H Telephone: (404) 235-2394

AFCEE

Contact:	Captain Ed Marchand Telephone: (210) 536-4364

Robins AFB

Contact:	Mr. Dale Fox Telephone: (912) 926-0983

EMERGENCY CONTACT SHEET

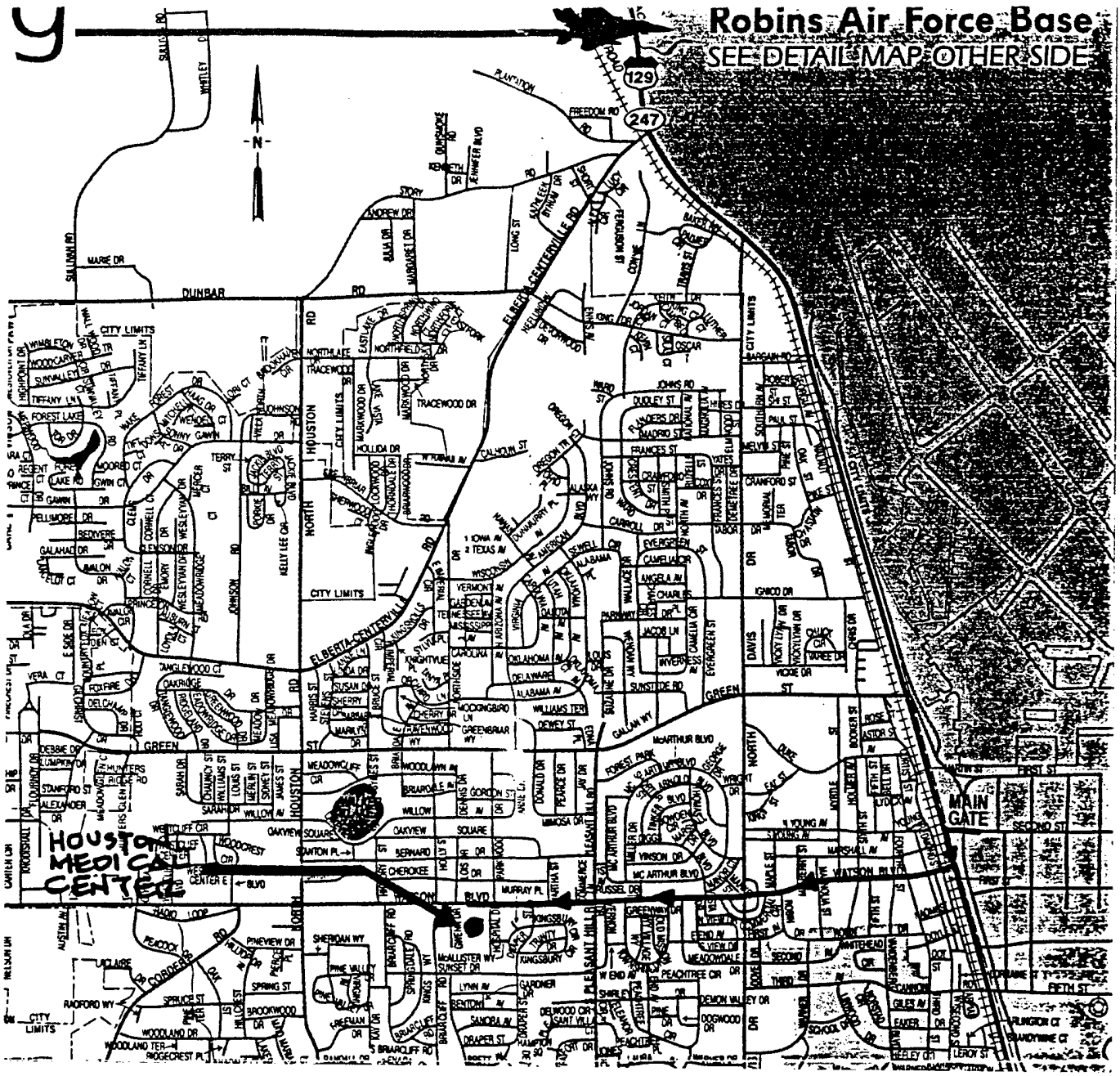
In the event of any situation of unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the list below. For emergency situations, contact should first be made with the site coordinator who will notify emergency personnel who will then contact the appropriate response teams. The emergency contact list must be posted at the site.

Contingency Contacts	Phone Number
Base Fire Department	(912) 926-3487
Police Department	911

Medical Emergency

Nearest Hospital:	Houston Medical Center
Phone No.:	(912) 542-7800
Address:	1601 Watson Blvd. Warner Robins, GA
Travel Time from Site:	10 - 15 minutes
Map to Hospital and Written Directions	see next page - iii
Ambulance	911

MAP TO HOSPITAL



Route to Hospital:

Exiting from the Second Street Gate, turn left on to Highway 247. Turn right at the first light (Watson Boulevard). Drive west on Watson Boulevard for approximately two (2) miles. Houston Medical Center will be on the left.

CLOSURE SOIL SAMPLING
BUILDING 173 - FORMER DIESEL UST SITE
SITE SPECIFIC HEALTH AND SAFETY INFORMATION

1.0 PURPOSE AND POLICY

The purpose of this document is to identify site specific health and safety information to be used during the Closure Sampling at Building 173 Former Diesel UST Site. The site specific information discussed in this document will be used in conjunction with the health and safety policies, practices, and procedures outlined in the attached *Program Health and Safety Plan for Extended Bioventing,* (Parsons ES, 1995).

2.0 SITE DESCRIPTION

Building 173 is the former location of a 1,500 gallon diesel underground storage tank (UST). The UST was used to store diesel fuel for use in emergency power generators. The UST was located on the west side of Building 173, in the area just north of an existing gazebo. The UST was abandoned in place approximately 22 years ago and was excavated and removed in October 1989. Soil samples collected from the excavation after the removal of the tank indicated the presence of petroleum hydrocarbon constituents.

Additional site characterization work was performed at the site in 1990 and 1992. The purpose of the investigations were to determine the extent of petroleum hydrocarbon contamination to the surrounding media. Results of the investigation confirmed the presence of hydrocarbons in the soil. Approximately 200 cubic yards of contaminated soil was removed from the excavation area and disposed of at Button Gwinnett Landfill in Lawrenceville, GA. Contaminated soil on the south end of the excavation could not be removed without undermining foundation of the gazebo located on site.

To remediate the contaminated soils remaining at the former UST site at Building 173, a bioventing system was installed and system start up was initiated in September 1992. Soil and soil gas samples collected after 3 years of system operation indicate that concentrations of petroleum hydrocarbon constituents have been reduced.

3.0 SCOPE OF WORK

The scope of work for the field activities scheduled at the site consists of the advancement of soil borings, and the collection of soil and groundwater samples for laboratory analysis.

4.0 PROJECT TEAM ORGANIZATION

- Site Manager: Mr. Steve Ratzlaff

- Field Team Leader and Site Health and Safety Officer: Mr. Steve Ratzlaff
- Field Team Members: To be assigned.

4.1 Responsibilities of Project Personnel

The responsibilities of on-site personnel are listed below:

The Site Manager is responsible for the following:

Preparing and organizing the background review of the site.

- Coordinating the preparation and execution of the Work Plan and Health and Safety Plan.
- Preparing and organizing the field team.

The Field Team Leader has the authority to direct operations and site activities. Responsibilities of the Field Team Leader include the following:

Coordinating with Project Health and Safety Officer in determining protection level.

- Enforcing site control.
- Documenting field activities and sample collection.
- Serving as a liaison with site personnel

The responsibilities of the Project Health and Safety Officer include the following:

Periodically inspecting protective clothing and equipment.

- Ensuring that protective clothing and equipment are properly stored and maintained.
- Controlling entry and exit at the access control points.
- Confirming each team member's suitability for work based on a physician's recommendation.
- Monitoring the work parties for signs of stress, such as heat stress and fatigue.
- Implementing the Health and Safety Plan.
- Conducting periodic inspections to determine if the Health and Safety Plan is being followed.

- Knowing emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department and police department.

- Notifying, when necessary, local public emergency officials.

- Coordinating emergency medical care.

- Ensuring that required equipment is available.

- Advising medical personnel of potential exposures and consequences.

- Notifying emergency response personnel by telephone or radio in the event of an emergency.

Project team members involved in this field investigation are responsible for the following:

Taking precautions necessary to prevent injury to themselves and other employees.

- Complying with the Health and Safety Plan and reporting any deviations from this plan to the Field Team Leader.

- Performing only those tasks they believe they can do safely.

- Immediately reporting any accidents and/or unsafe conditions to the Field Team Leader.

5.0 HAZARDOUS MATERIALS MANAGEMENT

5.1 Hazardous Materials Index

The following hazardous materials may be utilized during work activities at the site:

- Methanol (16 liters)

- Isopropanol (16 liters)

Material Safety Data Sheets (MSDS) for these materials are provided in Attachment A.

5.2 Transport, Storage , and Use

The hazardous materials identified in Section 5.1 will be transported and stored in UN certified, Department of Transportation (DOT) approved shipping containers.

These chemicals will be used for decontamination of field instruments, and tools. Decontamination procedures are provided in Section 10 of the Program Health and Safety Plan for Extended Bioventing (Parsons ES, 1995).

5.3 Spill Response and Disposal

In the event of accidental spillage of a hazardous material, listed in Section 5.1, the following procedures will be followed.

1. Evacuate personnel from the immediate spill area;
2. Identify the chemical and the chemical's hazards (refer to MSDS);
3. Determine the appropriate spill clean-up method (vermiculite granules for spills of isopropanol or methanol);
4. Ensure appropriate personal protective equipment is donned;
5. Conduct cleanup of liquid using absorbent materials;
6. Evaluate the media beneath the spill for the presence of the spilled chemical.
7. If impacted media is found, remove the media and ensure proper disposal.

5.4 Chemical Labeling

Bottles of methanol and isopropanol recieved from the chemical supply company will be inspected to ensure that they are labelled. Unlabelled containers will be returned to the suppier. When decontamination sovents are transfered to a nagalene® bottle for temporary use, the nagalene® bottle will be labeled to identify its content. All labels must include the following information:

- The identity of the chemical.
- An appropriate hazard warning (e.g., flammable, skin and eye irritant, ect)
- The name and address of the chemical manufacturer, importer, or other responsible party.

Field personnel handling decontamination solvents must understand the labeling system.

ATTACHMENT A

IMBE 12221RED SCHOOL LANE, PHILLIPSBURG, NJ 08865

File 1; Entry 1; Accession No. 98840

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865

M A T E R I A L S A F E T Y D A T A S H E E T

24-HOUR EMERGENCY TELEPHONE -- (201) 859-2151

I8840 -03 . ISOPROPYL ALCOHOL

EFFECTIVE: 09/14/87 ISSUED: 10/27/87

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: ISOPROPYL ALCOHOL
FORMULA: CH3CHOHCH3
FORMULA WT: 60.10
CAS NO.: 67-63-0
NIOSH/RTECS NO.: NT8050000
COMMON SYNONYMS: 2-PROPANOL; ISOPROPANOL; SEC-PROPYL ALCOHOL: IPA; DIMETHYLCARBINOL
PRODUCT CODES: U238,5082,9080

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 1 SLIGHT
FLAMMABILITY - 3 SEVERE (FLAMMABLE)
REACTIVITY - 1 SLIGHT
CONTACT - 1 SLIGHT
HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

SAFETY GLASSES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

PRECAUTIONARY LABEL STATEMENTS

WARNING
FLAMMABLE
CAUSES IRRITATION
HARMFUL IF SWALLOWED OR INHALED
KEEP AWAY FROM HEAT, SPARKS, FLAME. AVOID CONTACT WITH EYES, SKIN, CLOTHING.
AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE, USE ALCOHOL FOAM, DRY CHEMICAL, CARBON DIOXIDE - WATER MAY BE INEFFECTIVE.

THRESHOLD LIMIT VALUE (TLV/TWA): 980 MG/M3 (400 PPM)

SHORT-TERM EXPOSURE LIMIT (STEL): 1225 MG/M3 (500 PPM)

PERMISSIBLE EXPOSURE LIMIT (PEL): 980 MG/M3 (400 PPM)

TOXICITY: LD50 (ORAL-RAT) (MG/KG) - 5045
LD50 (IPR-MOUSE) (MG/KG) - 933
LD50 (SKN-RABBIT) (G/KG) - 13
LD50 (IV-MOUSE) (MG/KG) - 1863

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE

INHALATION OF VAPORS MAY CAUSE HEADACHE, NAUSEA, VOMITING, DIZZINESS, DROWSINESS, IRRITATION OF RESPIRATORY TRACT, AND LOSS OF CONSCIOUSNESS.
INHALATION OF VAPORS MAY CAUSE PULMONARY EDEMA.
LIQUID MAY BE IRRITATING TO SKIN AND EYES. PROLONGED SKIN CONTACT MAY RESULT IN DERMATITIS. EYE CONTACT MAY RESULT IN TEMPORARY CORNEAL DAMAGE.
INGESTION MAY CAUSE NAUSEA, VOMITING, HEADACHES, DIZZINESS, GASTROINTESTINAL IRRITATION.
INGESTION MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION.

TARGET ORGANS

EYES, SKIN, RESPIRATORY SYSTEM, CENTRAL NERVOUS SYSTEM, LUNGS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

NONE IDENTIFIED

ROUTES OF ENTRY

INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

CALL A PHYSICIAN.
IF SWALLOWED, DO NOT INDUCE VOMITING.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. FLUSH SKIN WITH WATER.

SECTION VI - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION

INCOMPATIBLES: STRONG OXIDIZING AGENTS, ALUMINUM, NITRIC ACID, SULFURIC ACID, AMINES AND AMMONIA, HALOGEN ACIDS AND HALOGEN COMPOUNDS, ALDEHYDES

DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME	ISOPROPANOL
HAZARD CLASS	3.2
UN/NA	UN1219
LABELS	FLAMMABLE LIQUID

(TM) AND (R) DESIGNATE TRADEMARKS.
N/A = NOT APPLICABLE OR NOT AVAILABLE

Option? K

METHANOL

CAS NO.: 67-56-1
NIOSH/RTECS NO.: PC1400000
COMMON SYNONYMS: METHYL ALCOHOL; WOOD ALCOHOL; CARBINOL; METHYLOL; WOOD SPIRIT
PRODUCT CODES: 9849, 9872, 9875, 9876, 9871, 5217, 9874, P704, 9893, 5536, 9868, 9873 9891, 9263, 9869, 9870, 5370, 9127

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 3 SEVERE (POISON)
FLAMMABILITY - 3 SEVERE (FLAMMABLE)
REACTIVITY - 1 SLIGHT
CONTACT - 1 SLIGHT
HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

PRECAUTIONARY LABEL STATEMENTS

POISON DANGER
FLAMMABLE
HARMFUL IF INHALED
CANNOT BE MADE NON-POISONOUS
MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED
KEEP AWAY FROM HEAT, SPARKS, FLAME. DO NOT GET IN EYES, ON SKIN, ON CLOTHING. AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE, USE ALCOHOL FOAM, DRY CHEMICAL, CARBON DIOXIDE - WATER MAY BE INEFFECTIVE. FLUSH SPILL AREA WITH WATER SPRAY.

SAF-T-DATA(TM) STORAGE COLOR CODE: RED (FLAMMABLE)

SECTION II - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
METHANOL	90-100	67-56-1

SECTION III - PHYSICAL DATA

BOILING POINT: 65 C (149 F)
VAPOR PRESSURE(MM HG): 96
MELTING POINT: -98 C (-144 F)
VAPOR DENSITY(AIR=1): 1.11

SUFFOCATION, LOWER BLOOD PRESSURE, CENTRAL NERVOUS SYSTEM DEPRESSION.
LIQUID MAY BE IRRITATING TO SKIN AND EYES. PROLONGED SKIN CONTACT MAY RESULT IN DERMATITIS. EYE CONTACT MAY RESULT IN TEMPORARY CORNEAL DAMAGE.
INGESTION MAY CAUSE BLINDNESS.
INGESTION MAY CAUSE NAUSEA, VOMITING, HEADACHES, DIZZINESS, GASTROINTESTINAL IRRITATION, CENTRAL NERVOUS SYSTEM DEPRESSION AND HEARING LOSS.
CHRONIC EFFECTS OF OVEREXPOSURE MAY INCLUDE KIDNEY AND/OR LIVER DAMAGE.

TARGET ORGANS

EYES, SKIN, CENTRAL NERVOUS SYSTEM, GI TRACT, RESPIRATORY SYSTEM, LUNGS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

EYE DISORDERS, SKIN DISORDERS, LIVER OR KIDNEY DISORDERS

ROUTES OF ENTRY

INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT, ABSORPTION

EMERGENCY AND FIRST AID PROCEDURES

CALL A PHYSICIAN.
IF SWALLOWED, IF CONSCIOUS, GIVE LARGE AMOUNTS OF WATER. INDUCE VOMITING.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.
WASH CLOTHING BEFORE RE-USE.

SECTION VI - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION

INCOMPATIBLES: STRONG OXIDIZING AGENTS, STRONG ACIDS, ZINC, ALUMINUM, MAGNESIUM

DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE, FORMALDEHYDE

SECTION VII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.
SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN AREA. STOP LEAK IF YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINER FOR LATER DISPOSAL. FLUSH AREA WITH WATER.

J. T. BAKER SOLUSORB(R) SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS OF THIS PRODUCT.

DISPOSAL PROCEDURE